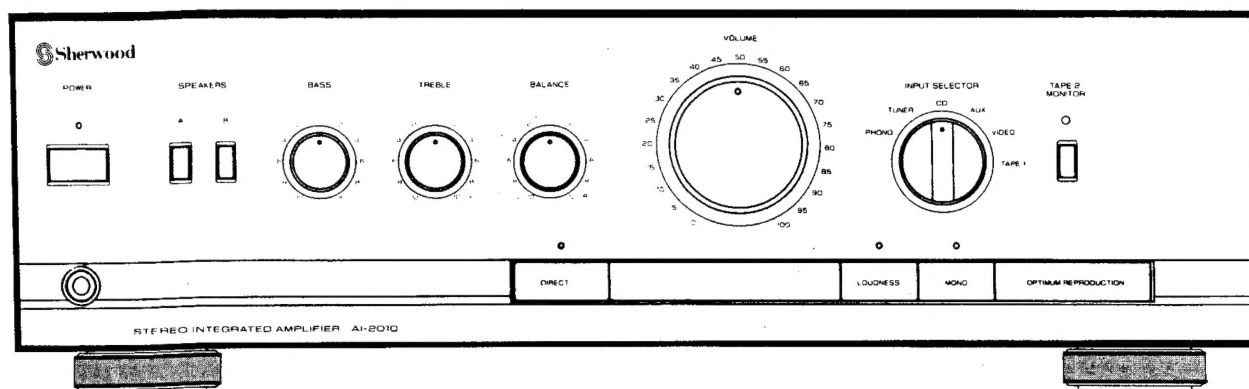


SERVICE MANUAL

AI-2010 STEREO INTEGRATED AMPLIFIER



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Safety Precaution

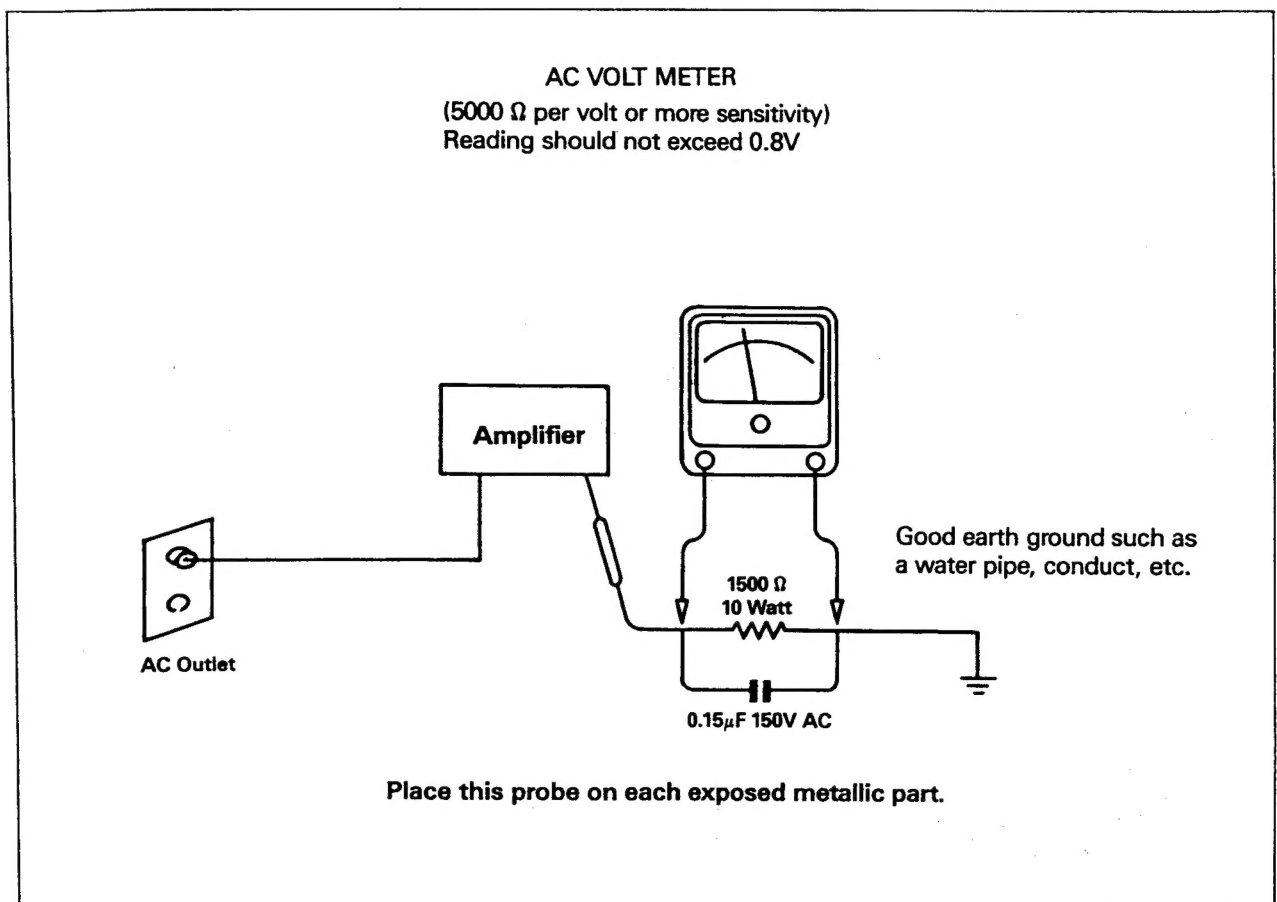
WARNING

Service should not be attempted by anyone unfamiliar with the necessary precautions on this player. The following precautions are necessary during servicing.

1. Many electrical and mechanical parts in this player have special characteristics often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristic are identified in this manual and its supplements: electrical components having such features are identified by a \triangle in the schematic diagram and the parts list. Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire or other hazards.
2. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as

terminals, screwheads, metal overlays, etc. to be sure the set is safe to operate without danger of electrical shock. Plug the AC line cord directly into a 120V AC outlet. (120V Version only). (Do not use a line isolation transformer during this check.) Use an AC voltmeter having 5000 Ω per volt or more sensitivity in the following manner:

0.15 μ F, 150V AC capacitor, between a known good earth ground (water pipe, conduct, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1500 Ω resistor and 0.15 μ F capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.3volts RMS. This corresponds to 0.2mA AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



Specifications (USA/Canada version)

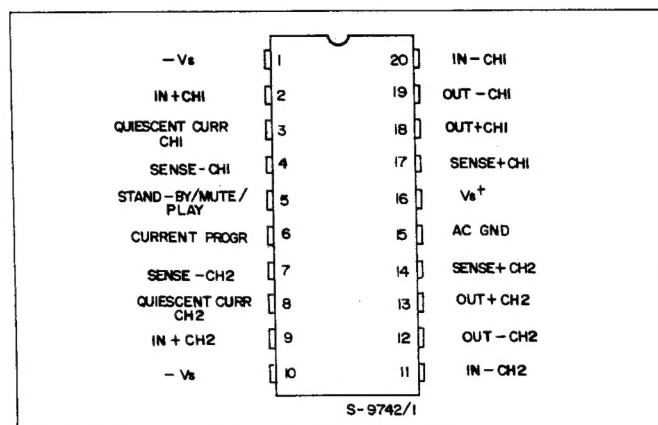
Minimum Continuous Average Power Output per CH., both channels driven with no more than 0.05% THD at 8 ohms, 40-20,000Hz	40W
Intermodulation Distortion, 60Hz:7kHz=4:1 SMP 35W output into 8ohms	0.03%
Damping Factor at 1 kHz, 8ohms	90
Input Sensitivity for 42W output, 8ohms at 1kHz Phono	2.5mV
Aux/Tuner	150mV
Phono Pre-amp Input overload at 1kHz, 0.01% THD	180mV
Signal to noise ratio, IHF "A" wtd/unwtd Phono	174/70dB
Aux (CD/Video)	96/88dB
Frequency Response Phono, RIAA 40-20,000Hz	± 0.5dB
Aux at 1W, -3dB	5Hz-50kHz
Loudness Contour at 100Hz	+6dB
at 10kHz	+3dB
Tone Control Bass at 100Hz	+6dB
Treble at 10kHz	+3dB
Channel Separation at Aux 100Hz	± 10dB
1kHz	± 10dB
10kHz	45dB
Power Consumption	100W
Power Requirement; A : 120V 60Hz for USA & Canadian version B : 120 / 220V, 60 / 50Hz for multi-voltage version C : 230V 50Hz for general European version D : 230V 50Hz for Germanian & Italian version E : 240V 50Hz for British & Austalian version F : 230V 50Hz for Swiss & Scandinavian version	
Dimensions	440(W) × 125(H) × 280(D)mm 17.3(W) × 4.9(H) × 11(D)inch
Weight (net)	7kg (15lbs, 247oz)

Specifications *(European version)*

Power Output per channel	
IEC standard, 63Hz to 12.5 kHz, 8ohms/4ohms	50/67W
DIN standard, 1kHz, 8ohms/4ohms	54/74W
THD. –6dB Rated Output, 8ohms, 1kHz	0.01%
IMD. –6dB Rated Output, 8ohms	0.009%
Damping Factor at 1 kHz, 8ohms	90
Input Sensitivity for 42W output, 8ohms at 1kHz	
Phono	2.5mV
Aux/Tuner	150mV
Phono Pre-amp Input Overload at 1kHz, 0.1% THD	180mV
Signal to Noise ratio, IEC "A" wtd/unwtd	
Phono: 5 mV input, 2.2kohm shorted, vol adj 42w	74/70dB
Aux: 500 mV input, 22kohm shorted, vol adj 42w	95/88dB
Frequency Response	
Phono, RIAA 40-20,000Hz	± 0.5dB
Aux at 1W, –3dB	5Hz-50kHz
Loudness Contour	
at 100Hz	+6dB
at 10kHz	+3dB
Tone Control	
Bass at 100Hz	± 10dB
Treble at 10kHz	± 10dB
Power Consumption	250W
Power Requirement:	
A : 120V 60Hz for USA & Canadian version	
B : 120 / 220V, 60 / 50Hz for multi-voltage version	
C : 230V 50Hz for general European version	
D : 230V 50Hz for Germanian & Italian version	
E : 240V 50Hz for British & Austalian version	
F : 230V 50Hz for Swiss & Scandinavian version	
Dimensions	440(W) × 125(H) × 280(D)mm
	17.3(W) × 4.9(H) × 11(D)inch
Weight (net)	7kg(15lbs, 247oz)

Note: Specifications and design subject to change without notice for improvements. Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the European standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list.

Circuit Description

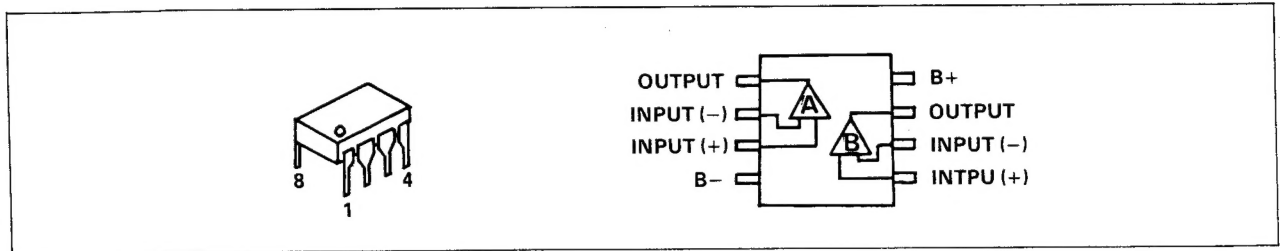


–TDA 7250 : IC 301
(Differential Amp & Voltage driver IC)

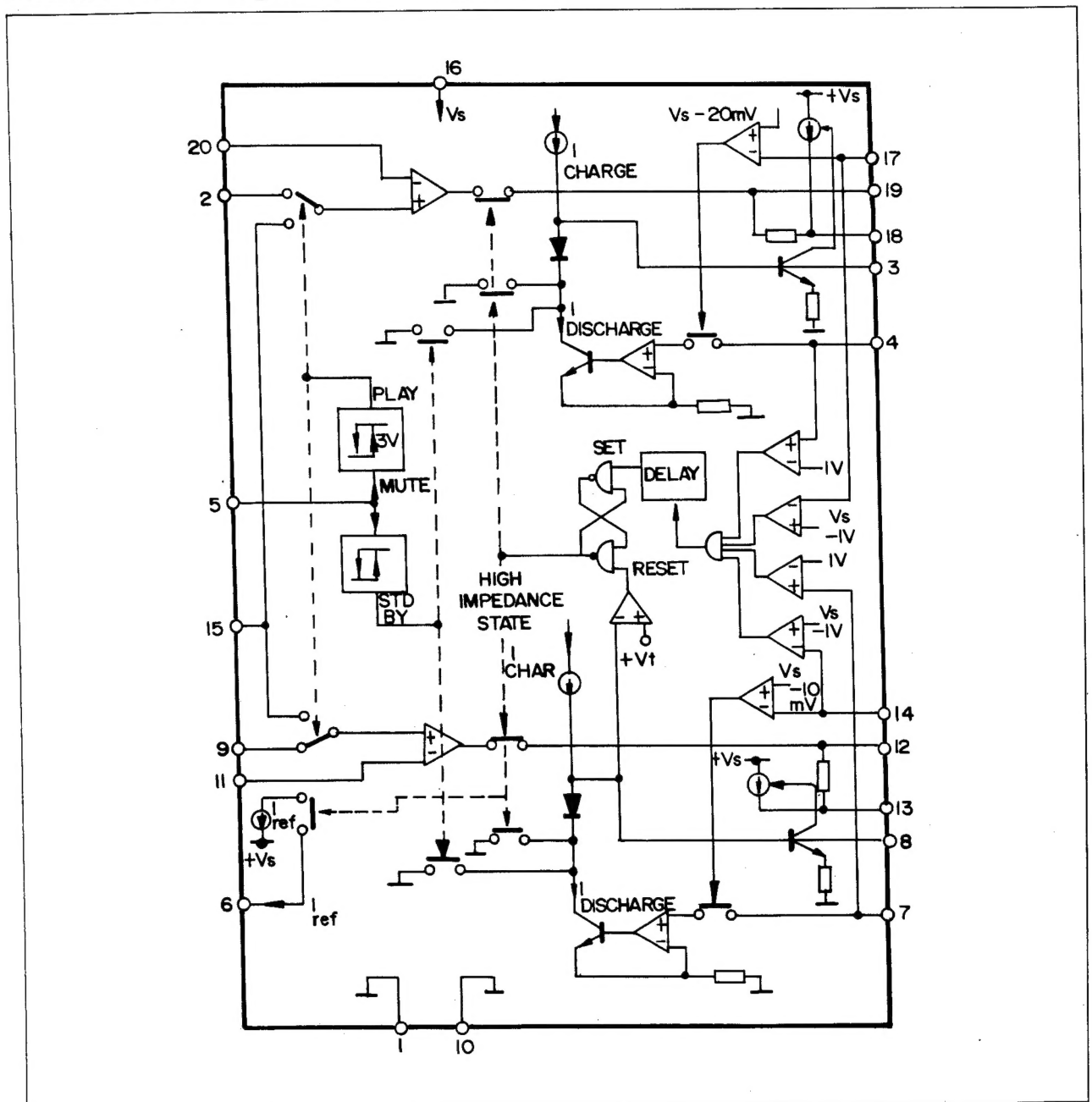
Pin Functions

No.	NAME	FUNCTION
1	V5-POWER SUPPLY	Negative supply voltage.
2	NON-INV. INP. CH. 1	Channel 1 input signal.
3	QUIESC. CURRENT CONTR. CAP. CH 1	This capacitor works as an integrator, to control the quiescent current to output devices in no-signal conditions on channel 1.
4	SENSE (–) CH. 1	Negative voltage sense input for overload protection and for automatic quiescent current control.
5	ST. BY/MUTE/PLAY	Three-functions terminal. For $V_{in}=1$ to 3V, the device is in MUTE and only quiescent current flows in the power stages; — for $V_{in} < 1V$, the device is in STAND-BY mode and no quiescent current is present in the power stages; — for $V_{in} \geq 3V$, the device is fully active.
6	CURRENT PROGRAM	High impedance power-stages monitor.
7	SENSE (–) CH. 2	Negative voltage sense input for overload protection and for automatic quiescent current control.
8	QUIESC. CURRENT CONTR. CAP. CH. 2	This capacitor works as an integrator, to control the quiescent current to output devices in no-signal conditions on channel 2. If the voltage at its terminals drops under 250mV, it also resets the device from high-impedance state of output stages.
9	NON-INV. INP. CH. 2	Channel 2 input signals.
10	V5-POWER SUPPLY	Negative supply voltage.
11	INVERT. INP. CH. 2	Feedback from output (channel 2).
12	OUT (–) CH. 2	Out signal to lower driver transistor of channel 2.
13	OUT (+) CH. 2	Out signal to higher driver transistor of channel 2.
14	SENSE (+) CH. 2	Positive voltage sense input for overload protection and for automatic quiescent current control.
15	COMMON AC GROUND	AC input ground in MUTE condition.
16	V5+ POWER SUPPLY	Positive supply voltage.
17	SENSE (+) CH. 1	Positive voltage sense input for overload protection and for automatic quiescent current control.
18	OUT (+) CH. 1	Out signal to high driver transistor of channel 1.
19	OUT (–) CH. 1	Out signal to low driver transistor of channel 1.
20	INVERT. INP. CH. 1	Feedback from output (channel 1).

— KIA 75559 P/NJM 2068DD; IC 101, 102, 201, 202



Internal Block Diagram (TDA 7250; IC 301)



Electrical Parts List

PRODUCT SAFETY NOTICE : Products marked with a Δ have special characteristics important to safety. If you replace any of these components, carefully read the product safety notice of this manual. Don't degrade the safety of the product through improper servicing. Resistors & Capacitors tolerance, D ($\pm 0.5\%$), J ($\pm 5\%$), K ($\pm 10\%$), M ($\pm 20\%$), Z ($+80\%$, -20%).

Ref.No	Part No.	Description	Remark
Main Board 4002122400			
Capacitors			
C301	3479247971	Electric SA 4.7 μ F 50V M	
C302	3479222071	Electric SA 22 μ F 50V M	
C303	3479268871	Electric SA 0.68 μ F 50V M	
C304	3579821130	Ceramic 820pF 50V J	
C305/306	3579101130	Ceramic 100pF 50V J	
C307/C308	3579331130	Ceramic 330pF 50V J	
C309	3579120130	Ceramic 12pF 50V J	
C310/C311	3479210121	Electric SA 100 μ F 10V M	
C312	3479222971	Electric SA 2.2 μ F 50V M	
C313	3479222121	Electric SA 220 μ F 10V M	
C314	3409247111	Electric SA 470 μ F 6.3V M	
C315	3479222141	Electric SA 220 μ F 2.5V M	
C316	3679473120	Mylar 0.047 μ F 100V J	
C317-C328		Not used!	
C329-C334	3579222530	Ceramic 2200pF 50V Z Δ	
C501/C502	3409233271	Electric SA 3300 μ F 50V M	
C503/C508	3479210179	Electric SA 100 μ F 50V M	
C504/C505	3479210071	Electric SA 10 μ F 50V M	
C506/C507	3479222071	Electric SA 22 μ F 50V M	
C509-C513	3509103451	Ceramic 0.01 μ F 500V K Δ	
C514	3479210171	Electric SA 100 μ F 50V M	
Coil			
L301	2648001010	Inductor, 0.5 μ H	
Diodes			
D301/D302	2258306101	1N4148	
D303	2258106100	1N4002	
D304	2258599121	Zener, MTZ 6.8V	
D305	2258599127	Zener, MTZ 18V	
D306	2258306101	1N4148	
Connectors			
CNT4	4428505410	Plug 7P	
CNT5	4428505610	Plug 4P	
CNT6	4428505710	Plug 3P	
CNT7	4428508210	Plug 2P	
CNT8	4428525790	Plug AC 3P	
IC's			
IC301	2178000001	TDA7250, SGS Drive IC	
IC501	2168600101	GL7818, Regulator	
IC502	2168600106	MC7918, Regulator	
Relays			
RLY301	5528001590	G522-2A DC24V	
RLY302	5528001590	G522-2A DC24V	
Resistors			
R301	3069102970	1k Ω	

Ref.No	Part No.	Description	Remark
R302/R305	3069223970	22k Ω	
R303	3069104970	100k Ω	
R304	3069272970	2.7k Ω	
R306/R307	3069105970	1M Ω	
R308	3069122970	1.2k Ω	
R309	3069150970	15 Ω	
R310	3069680970	68 Ω	
R311/R312	3069391970	390 Ω	
R313/R314	3069101970	100 Ω	
R315	3069680970	68 Ω	
R316	3069150970	15 Ω	
R317	3069933970	3.3 Ω	
R318	3069947970	4.7 Ω	
R319	3069103970	10k Ω	
R320	3069183970	18k Ω	
R321/R322	3059188682	C., 0.18 Ω 3W	
R323	3069102970	1k Ω	
R324	3069104970	100k Ω	
R325/R326	3069103970	10k Ω	
R327	3069473970	47k Ω	
R328	3069102970	1k Ω	
R329	3069563970	56k Ω	
R330	3069222970	2.2k Ω	
R331	3069471970	470 Ω	
R332	3069473970	47k Ω	
R333	3069105970	1M Ω	
R334/R335	3069153970	15k Ω	
R336	3069182970	1.8k Ω	
R337/R344	3069101970	100 Ω	
R338	3069183970	18k Ω	
R339/R340	3069471970	470 Ω	
R341	3069100970	10 Ω	
R342/R343	3069220970	22 Ω	
R501/R502	3029680572	M.O., 68 Ω 2W	
R503/R504	3069472970	4.7k Ω	
Transistors			
Q301	2208606112	2SD1302S NPN	
Q302	2208222105	DTA114Y PNP	
Q303	2228406102	KTC2235Y NPN	
Q304	2228106107	KTA965Y PNP	
Q305	2208116105	2SA1489 PNP	
Q306	2208416108	2SC3853 NPN	
Q307	2208206105	KTA1015Y PNP	
Q308	2208606104	KTC1815Y NPN	
Q309-Q311	2208609114	MPSA06 NPN	

Ref.No	Part No.	Description	Remark
Input Board 4002122500			
Capacitors			
C101	3579220130	Ceramic 22pF 50V J	
C102	3579680130	Ceramic 68pF 50V J	

Ref.No	Part No.	Description	Remark
C103	3479247971	Electric SA 4.7 μ F 50V M	
C104	3579100130	Ceramic 10pF 50V J	
C105	3579222530	Ceramic 2200pF 50V Z	
C106	3479210071	Electric SA 10 μ F 50V M	
C107	3679182120	Mylar 0.0018 μ F 100V J	
C108/C112	3679562120	Mylar 0.0056 μ F 100V J	
C109/C110	3479247041	Electric SA 47 μ F 25V M	
C111	3479268871	Electric SA 0.68 μ F 50V M	
C113-C115	3579103530	Ceramic 0.01 μ F 50V Z	D
C116-C131	3519101935	Ceramic 100pF 50V J	D
C132	3579471130	Ceramic 470pF 50V J	
C133/C134	3479247041	Electric SA 47 μ F 25V M	
C135	3479222041	Electric SA 22 μ F 25V M	

Connectors

CNT1	4428505810	Plug 6P	
CNT2	4428508210	Plug 2P	

Coil

L101	2548601470	Inductor, 50mH	D
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IC's

IC101	2168020106	N J M 2068DD, OP AMP	
IC102	2168206104	KIA 75559P, OP AMP	

Resistors

R101	3069272970	2.7k Ω	
R102/R103	3069913970	91k Ω	
R104	3069821970	820 Ω	
R105	3069433970	43k Ω	
R106	3069564970	560k Ω	
R107	3069561970	560 Ω	
R108	3069104970	100k Ω	
R109/R110	3069221970	220 Ω	
R111/R113	3069102970	1k Ω	
R112/R114	3069104970	100k Ω	
R115/R117	3069102970	1k Ω	
R116/R118	3069104970	100k Ω	
R119/R121	3069102970	1k Ω	
R120/R122	3069104970	100k Ω	
R123/R125	3069102970	1k Ω	
R124/R126	3069104970	100k Ω	
R127/R128	3069104970	100k Ω	
R129	3069471970	470 Ω	
R130/R131	3069221970	220 Ω	
R132	3069122970	1.2k Ω	

Ref.No	Part No.	Description	Remark
Tone Board 4002122510			
Capacitors			
C201/C205	3579331130	Ceramic 330pF 50V J	
C202	3479215871	Electric SA 0.15 μ F 50V M	
C203	3479247971	Electric SA 4.7 μ F 50V M	
C204	3579101130	Ceramic 100pF 50V J	
C206	3579221130	Ceramic 220pF 50V J	
C207/C208	3479247041	Electric SA 47 μ F 25V M	
C209/C218	3479247941	Electric SA 4.7 μ F 50V M	
C210	3579102530	Ceramic 1000pF 50V Z	

Ref.No	Part No.	Description	Remark
C211/C212	3679223130	Mylar 0.022 μ F 100V J	
C213	3579561130	Ceramic 560pF 50V J	
C214	3479210971	Electric SA 1 μ F 50V M	
C215	3579330130	Ceramic 33pF 50V J	
C216/C217	3479247041	Electric SA 47 μ F 25V M	
C219/C220	3579561130	Ceramic 560pF 50V J	

Connectors

CNT1	4119106153	Ass'y 6P 150mm to Input B'D	
CNT3	4119102203	Ass'y 2P 200mm to Power Indicator B'D	
CNT4	4119107153	Ass'y 7P 150mm to Main B'D	

Diodes

D201-D203	2371124502	LED SLR-54YCD	
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IC's

IC201/IC202	2168206104	KIA75559P, OP AMP	
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Resistors

R201/R202	3069122970	1.2k Ω	
R203	3069473970	47k Ω	
R204	3069362970	3.6k Ω	
R205	3069471970	470 Ω	
R206	3069154970	150k Ω	
R207	3069821970	820 Ω	
R208	3069562970	5.6k Ω	
R209/R210	3069221970	220 Ω	
R211	3069104970	100k Ω	
R212	3069102970	1k Ω	
R213/R217	3069223970	22k Ω	
R214	3069333970	33k Ω	
R215	3069203970	20k Ω	
R216	3069684970	680k Ω	
R218/R219	3069221970	220 Ω	
R220	3069471970	470 Ω	
R221	3069104970	100k Ω	
R222	3069102970	1k Ω	
R223	3069225970	2.2M Ω	
R224	3069122970	1.2k Ω	

Ref.No	Part No.	Description	Remark
Tape 2 Indicator Board 4002122460			
Connector			
CNT2	4119102103	Ass'y 2P 100mm to Input B'D	
Diode			
D401	2371124502	Diode, LED SLR-54YCD	

Ref.No	Part No.	Description	Remark
Power Indicator Board 4002122450			
Connector			
CNT3	4428508210	Plug 2P	
D801	2371124702	Diode, LED SLR-54URC	
R801	3069122970	Resistor, 1.2k Ω	

Ref.No	Part No.	Description	Remark
Head Phone Board 4002122440			
Capacitor			
C601	3579561130	Ceramic 560pF 50V J	
Connector			
CNT5	4119104353	Ass'y 4P 350mm to Main B'D	
Resistors			
R601	3029331472	M.O., 330Ω 1W	
R602	3069152970	1.5kΩ	

Ref.No	Part No.	Description	Remark
Posistor Board 4002122470			
Connector			
CNT7	4119102103	Ass'y 2P 100mm to Main B'D	
R701	2438012200	Posistor, PTH 9MO 4BE 222 T32F	

Ref.No	Part No.	Description	Remark
Switch Board 4002122410			
Capacitors			
C901	3549472411	Ceramic 0.0047μF 400V K	
Connectors			
CNT6	4119103203	Ass'y 3P 200mm to Main B'D	
CNT9	4428525780	Plug AC 2P	
CNT12	4428525790	Plug AC 3P	A,B,DOM.
Fuse			
F801	5508302135	TL20 250V 1.25A	
F.C	4255001010	Fuse Clip	

Ref.No	Part No.	Description	Remark
Voltage Selector Board 4002122420			
Connector			
NT13	4428525800	Plug AC 4P	
F701	5508202230	Fuse, NB20 1.5A 250V	DOM.

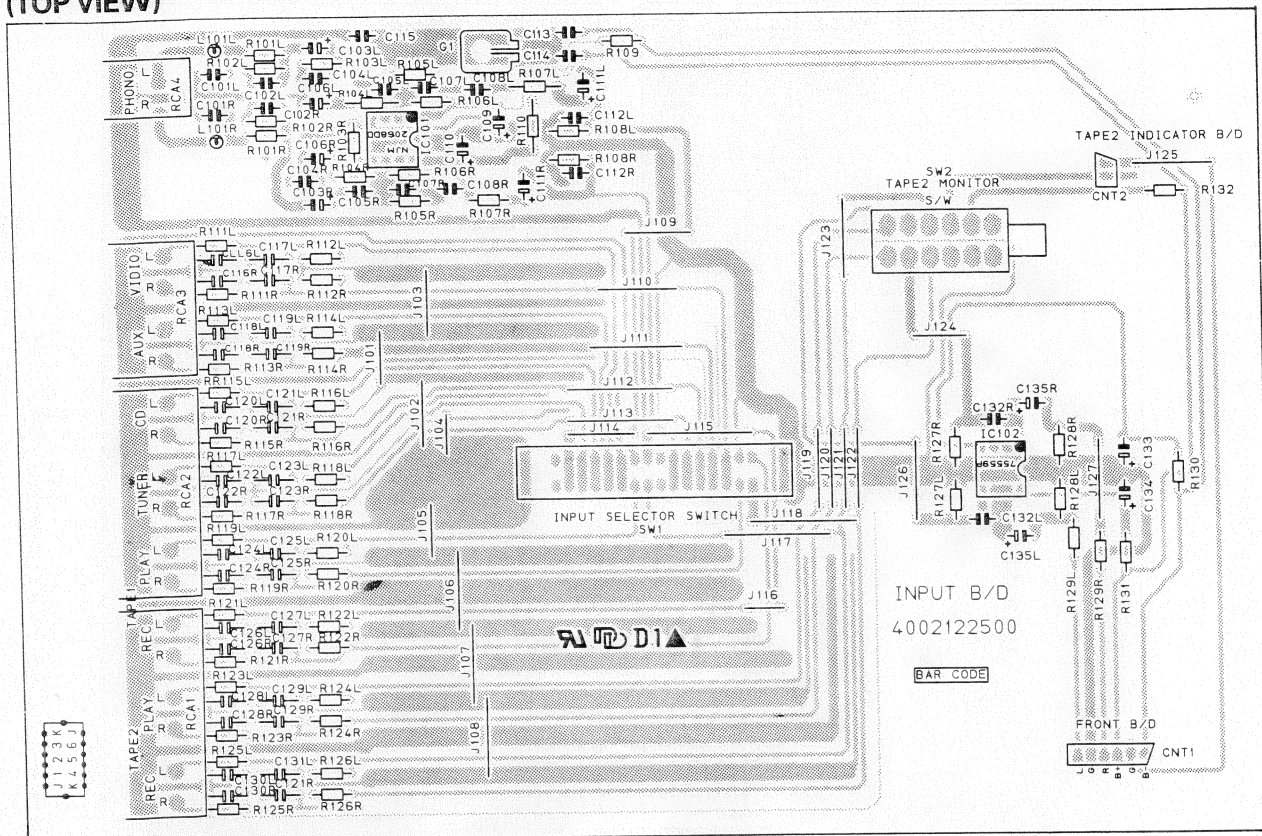
Mechanical Parts List

No.	Description	Part No.	Q'ty	Remark
1	Panel Front, Black	048501023711	1	Domestic
2	Badge, Sherwood	048535031911	1	
(2)	Badge	048535032511	1	
3	Spring	6555004380	1	
4	Button Power	8545074310	1	
5	Button Speaker	8545074910	3	
6	Knob Rotary	048543043611	3	
7	Knob VR Main	048543043411	1	
8	Knob Function	048543043511	1	
9	LED Guide	8555038310	5	
10	Guide Shaft	6043007410	1	
11	Jack Phone	4438005020	1	
12	Shield Phone	6165136410	1	
13	Switch Push, Power	4628055910	1	
14	Switch Push, Speaker	4628056610	1	
15	Cable Tie	6528000410	1	
16	Spring	6555002510	2	Domestic
17	Insert Button	6055003210	2	
18	VR 100KB 2, Bass/Treble	3208059610	2	
19	VR 100KMN, Balance	3208059710	1	
20	VR Main	3208058210	1	
21	Shield Fence	6163111610	1	
22	Switch Push (2/4)	4628056510	2	
23	Bracket Heatsink	6503023310	1	
24	Switch Push (2/2)	4628038810	1	
25	Button Function	048543028411	1	
26	Cover Bottom	6122415810	1	
27	Frame Right	6123013110	1	
28	Foot, Gold	046033101611	4	B,C,D,E,F
(28)	Foot, Gold	046033101711	4	Domestic
(28)	Foot-Front, Gold	046033101611	2	A
(28)	Foot-Rear, Black	6033101610	2	A
29	Cover Top, Black	046122021511	1	Domestic
30	Frame Left	6122901710	1	
31	Bracket P.C.Board	6505081610	2	
32	Shaft Switch	6305006210	1	
33	Chassis Back, Black	046102029011	1	
(33)	Chassis Back, Black	046102029021	1	
(33)	Chassis Back, Black	046102029031	1	
(33)	Chassis Back, Black	046102029041	1	
(33)	Chassis Back, Black	046102029051	1	
(33)	Chassis Back, Black	046102029061	1	
(33)	Chassis Back, Black	046102029071	1	
34	Terminal Speaker	4408105810	1	
35	Heatsink Power	7503013610	1	
36	Jack RCA, 6P	4438103210	2	
37	Jack RCA, 4P	4438103110	1	
38	Jack RCA, 2P	4438103010	1	
39	LED Holder	6515013110	5	Domestic
40	Terminal Ground	4408104910	1	
41	Adapter	4428300310	1	
42	Outlet, Black	4448100410	1	
43	Outlet, Black	4448102810	1	
(43)	Voltage Selector	4618006510	1	
44	Fastener	6528300810	1	
45	Bracket P.C.Board	6505108610	1	
46	Switch Rotary	4608002610	1	
47	Switch Push	4628051010	1	
48	Switch Slide	4618007510	1	
49	Cord Stopper, Black	6513000310	1	
(49)	Cord Stopper, Black	6518000710	1	
(49)	Cord Stopper, Black	6518000111	1	

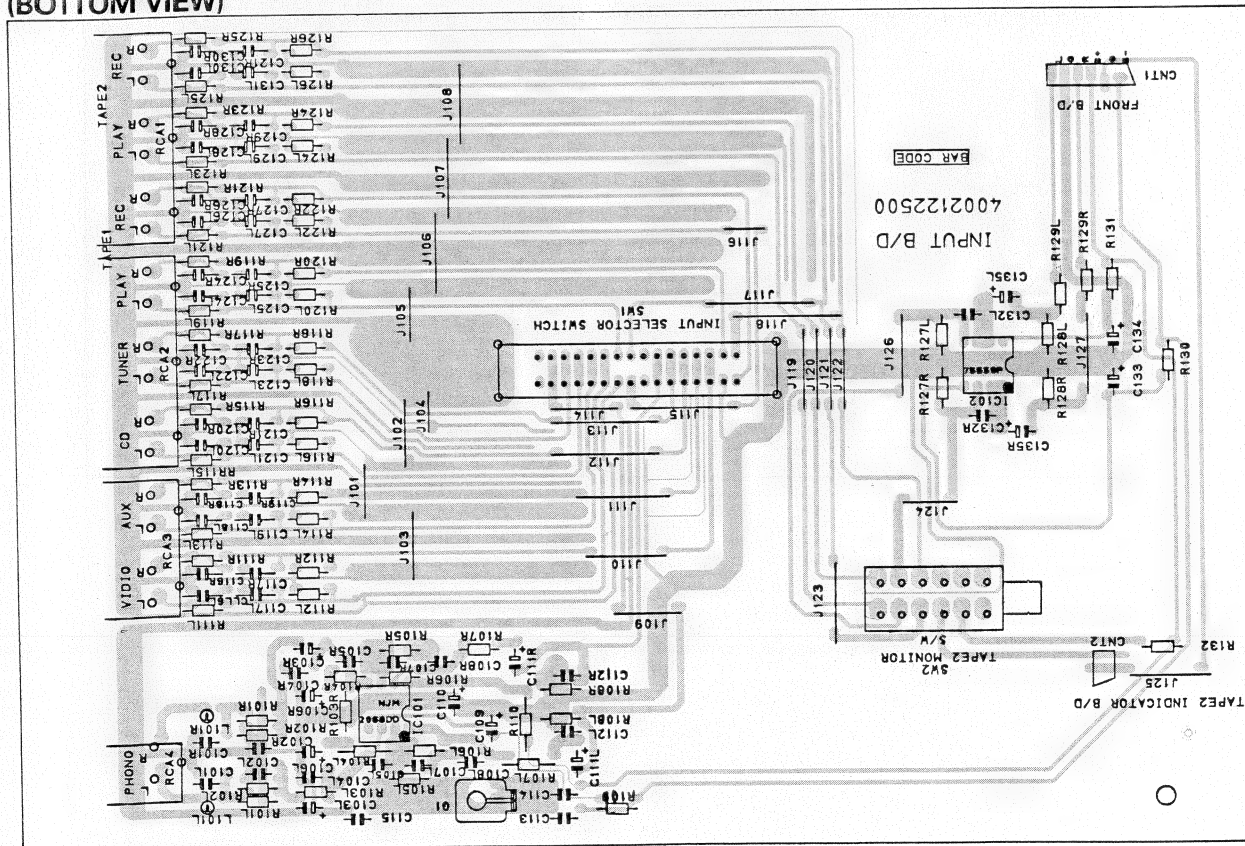
No.	Description	Part No.	Q'ty	Remark
(49)	Cord Stopper, Black	6513000210	1	E
50	Cord AC Power, Black	4308001610	1	Domestic
(50)	Cord AC Power, Black	4308001410	1	A,B
(50)	Cord AC Power, Black	4308000430	1	C,D,F
(50)	Cord AC Power, Black	4308000610	1	E
Screws				
S1	WSAM 4X8 ZNB	8159440083	8	
S2	2 BTC 3X8 ZNB	8109230083	37	
S3	2 WPTC 3X8 ZNY	8159230081	23	
S4	2 FTC 3X8 ZNB	8129230083	4	
S5	2 PTC 4X6 ZNY	8119240061	1	
S6	Ground	8155000710	2	
S7	HEX MSW 3X12 ZNY	8499130121	4	

P.C. Boards(Top & Bottom Views)

INPUT P.C. BOARD (TOP VIEW)

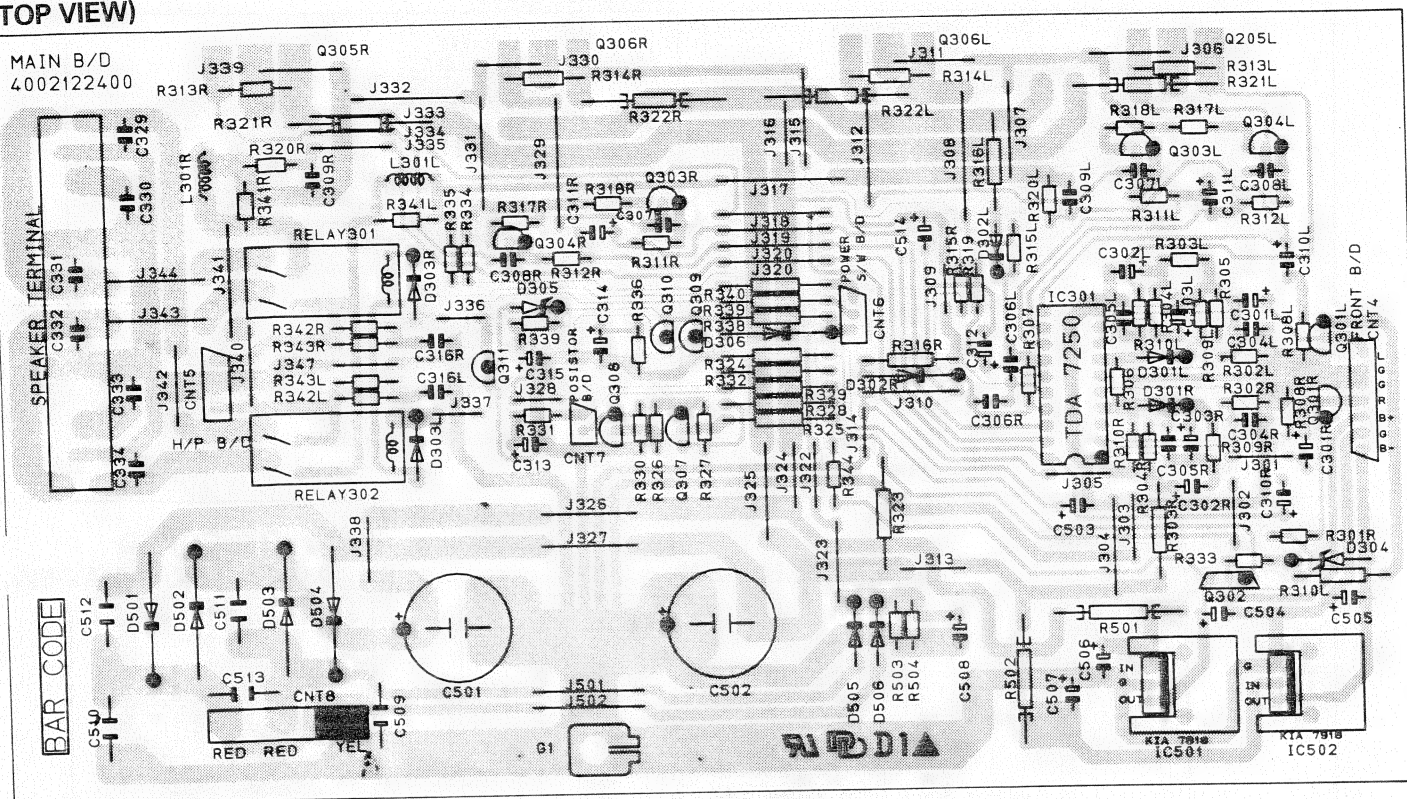


(BOTTOM VIEW)

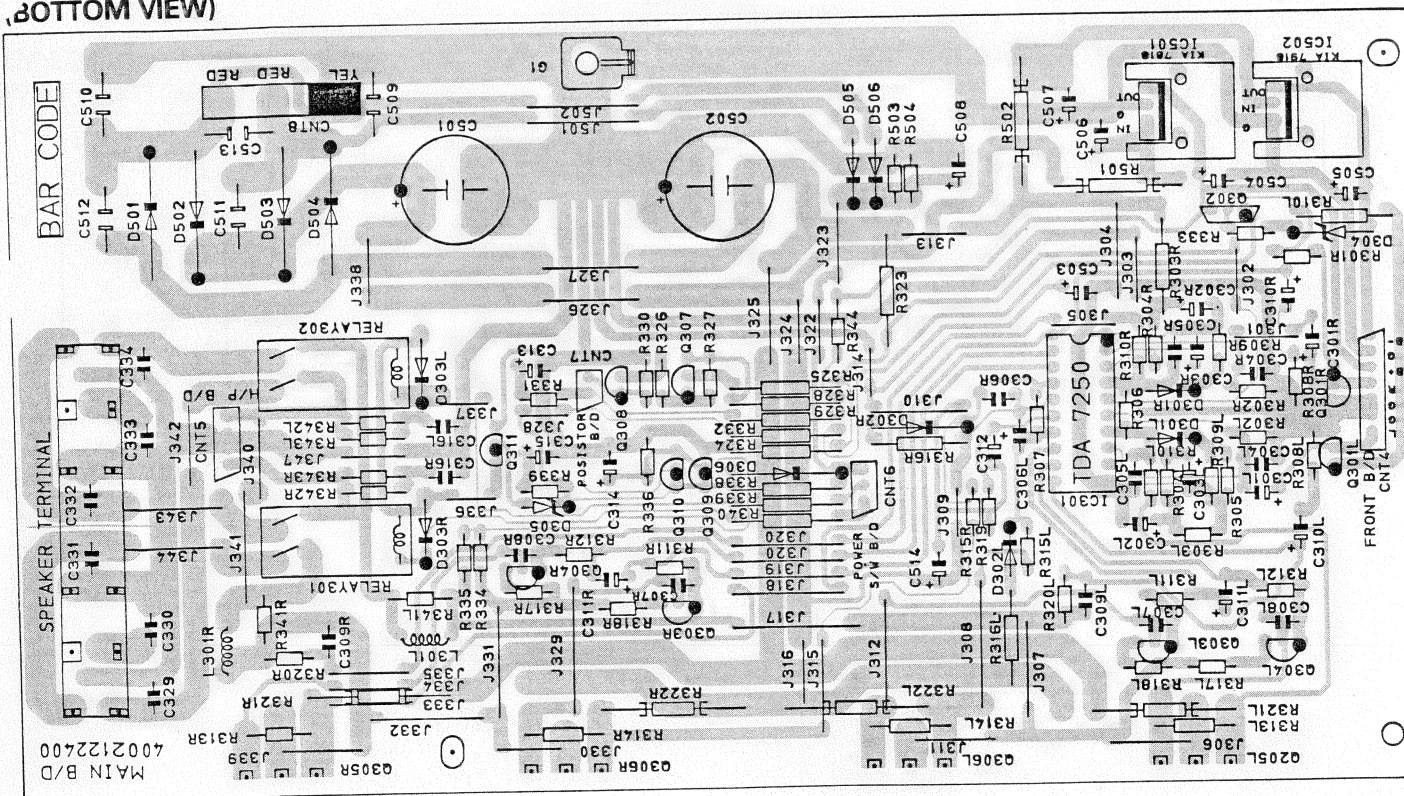


MAIN P.C. BOARD (TOP VIEW)

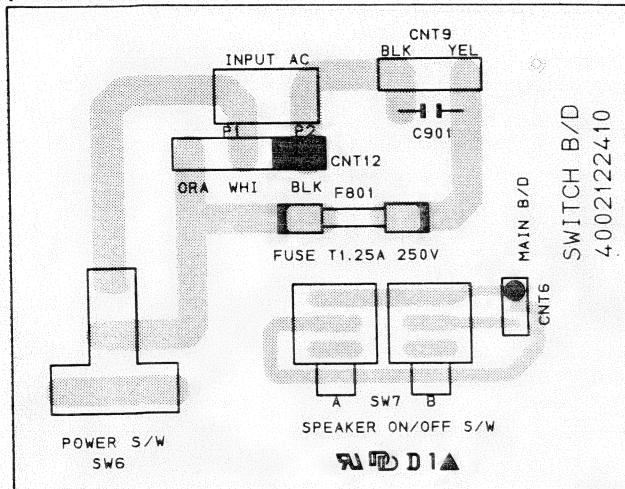
MAIN B/D
4002122400



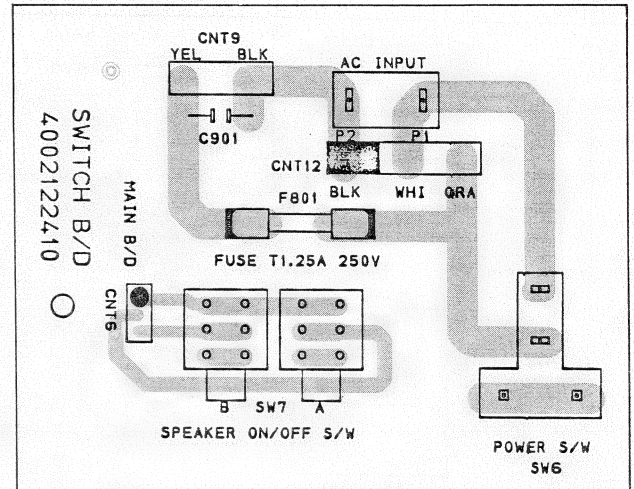
BOTTOM VIEW



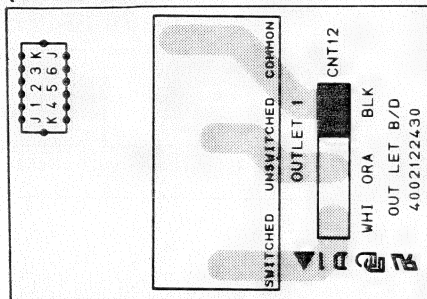
**SWITCH P.C. BOARD
(TOP VIEW)**



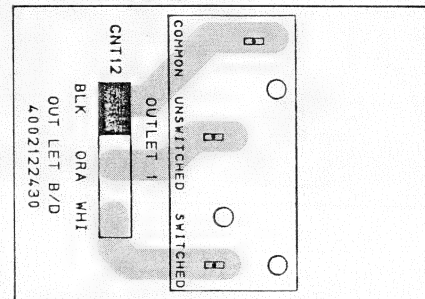
(BOTTOM VIEW)



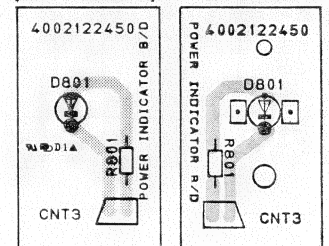
**OUT LET P.C. BOARD
(TOP VIEW)**



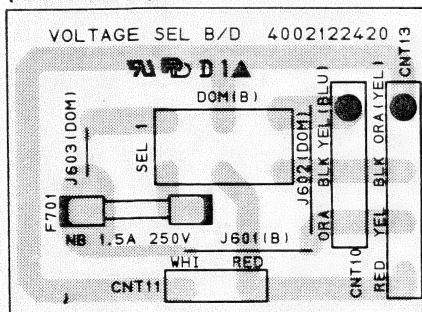
(BOTTOM VIEW)



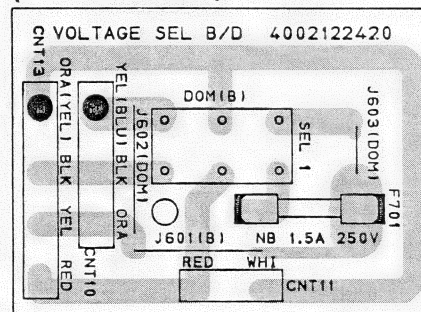
**INPUT P.C. BOARD
(TOP VIEW) (BOTTOM VIEW)**



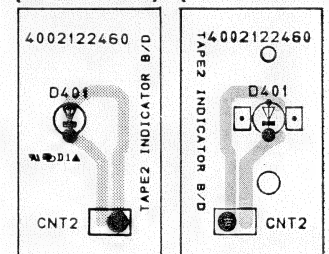
**VOLTAGE SEL P.C. BOARD
(TOP VIEW)**



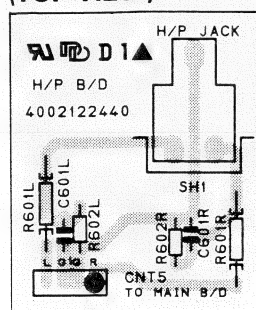
(BOTTOM VIEW)



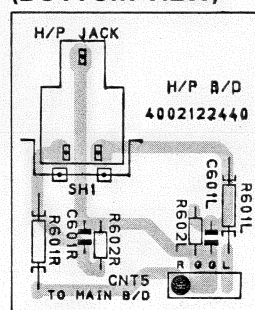
**TAPE2 INDICATOR BOARD
(TOP VIEW) (BOTTOM VIEW)**



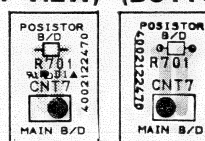
**H/P P.C. BOARD
(TOP VIEW)**



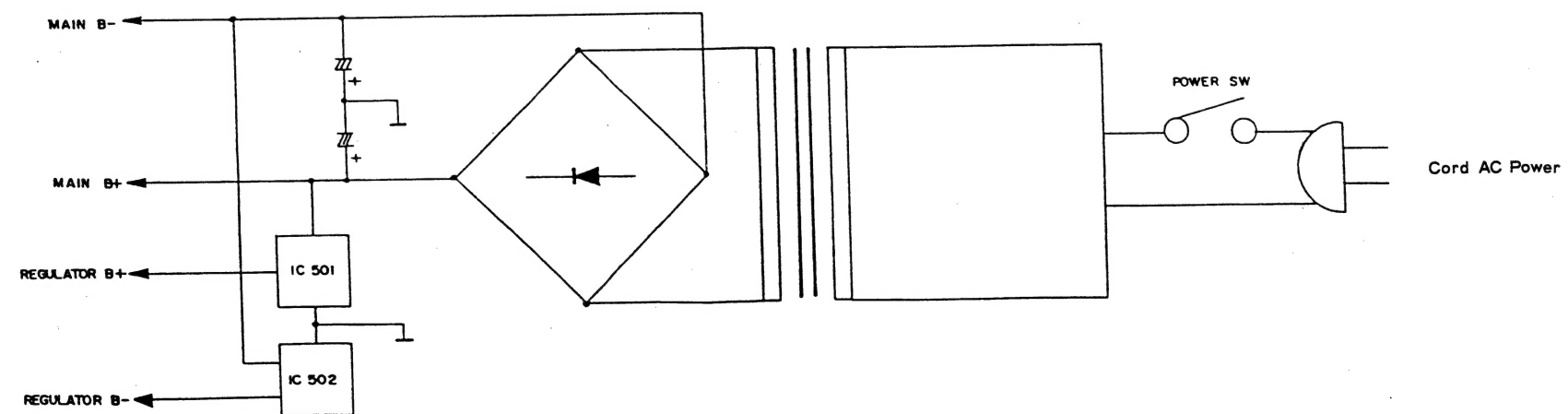
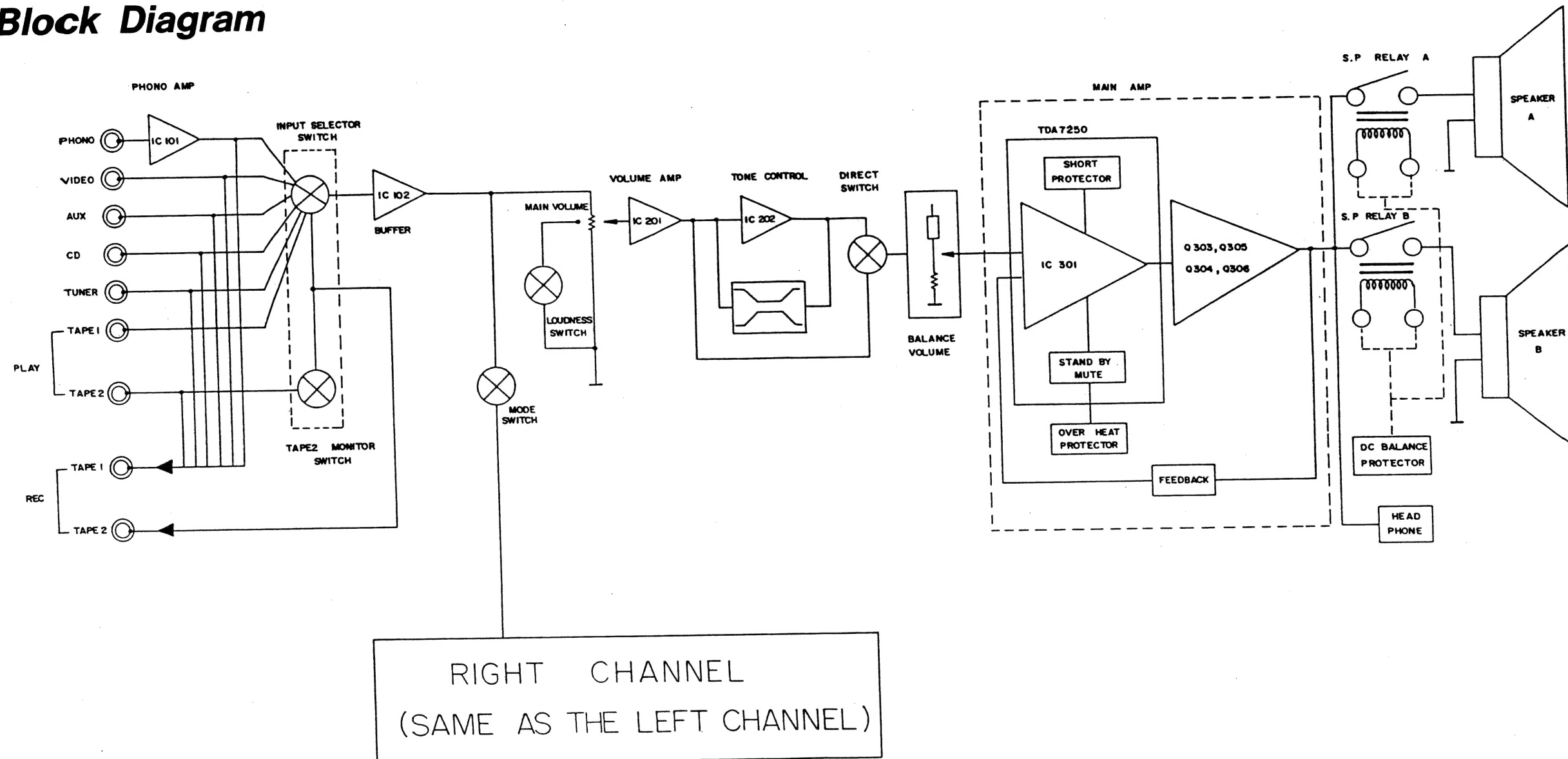
(BOTTOM VIEW)



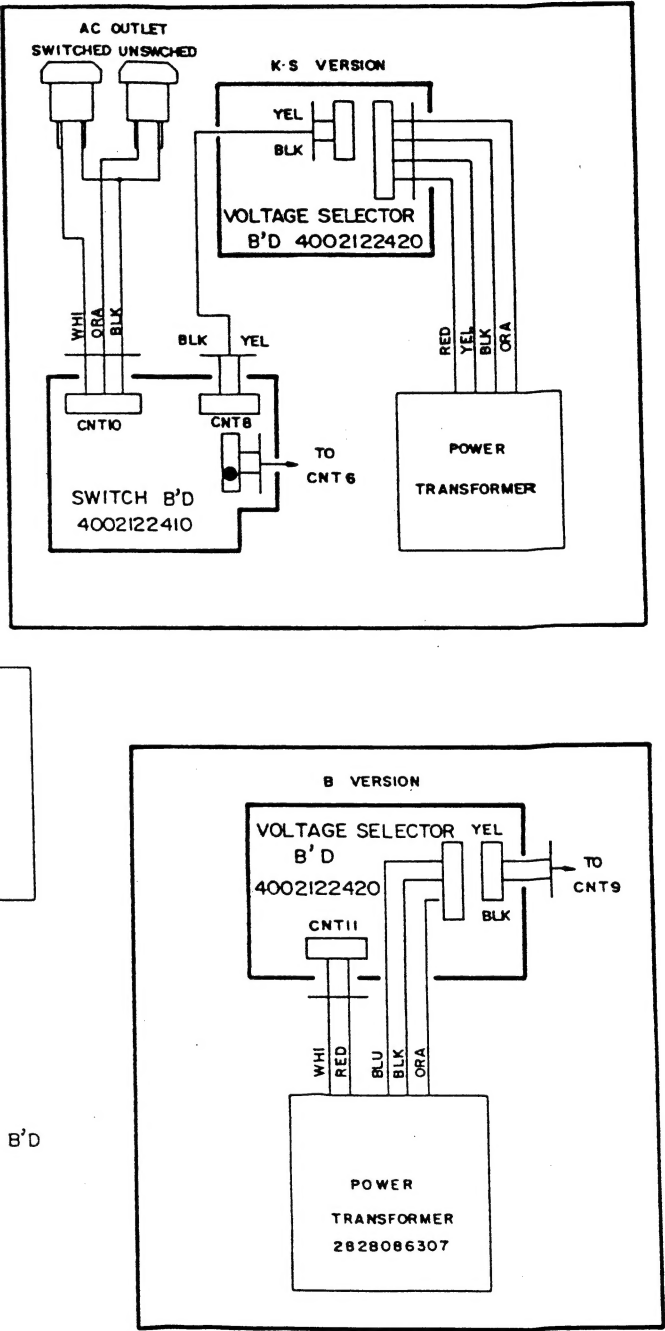
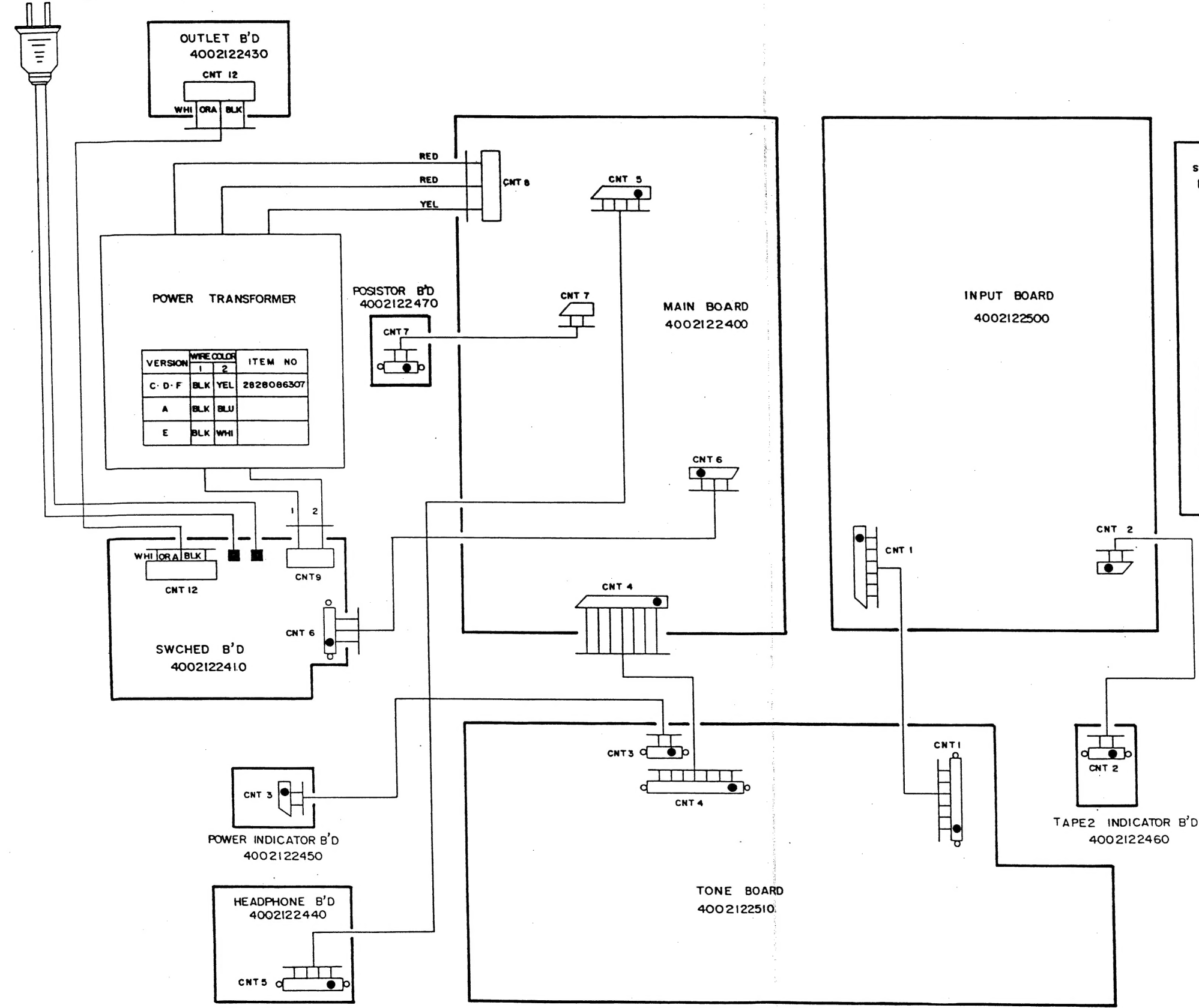
**POSISTOR P.C. BOARD
(TOP VIEW) (BOTTOM VIEW)**



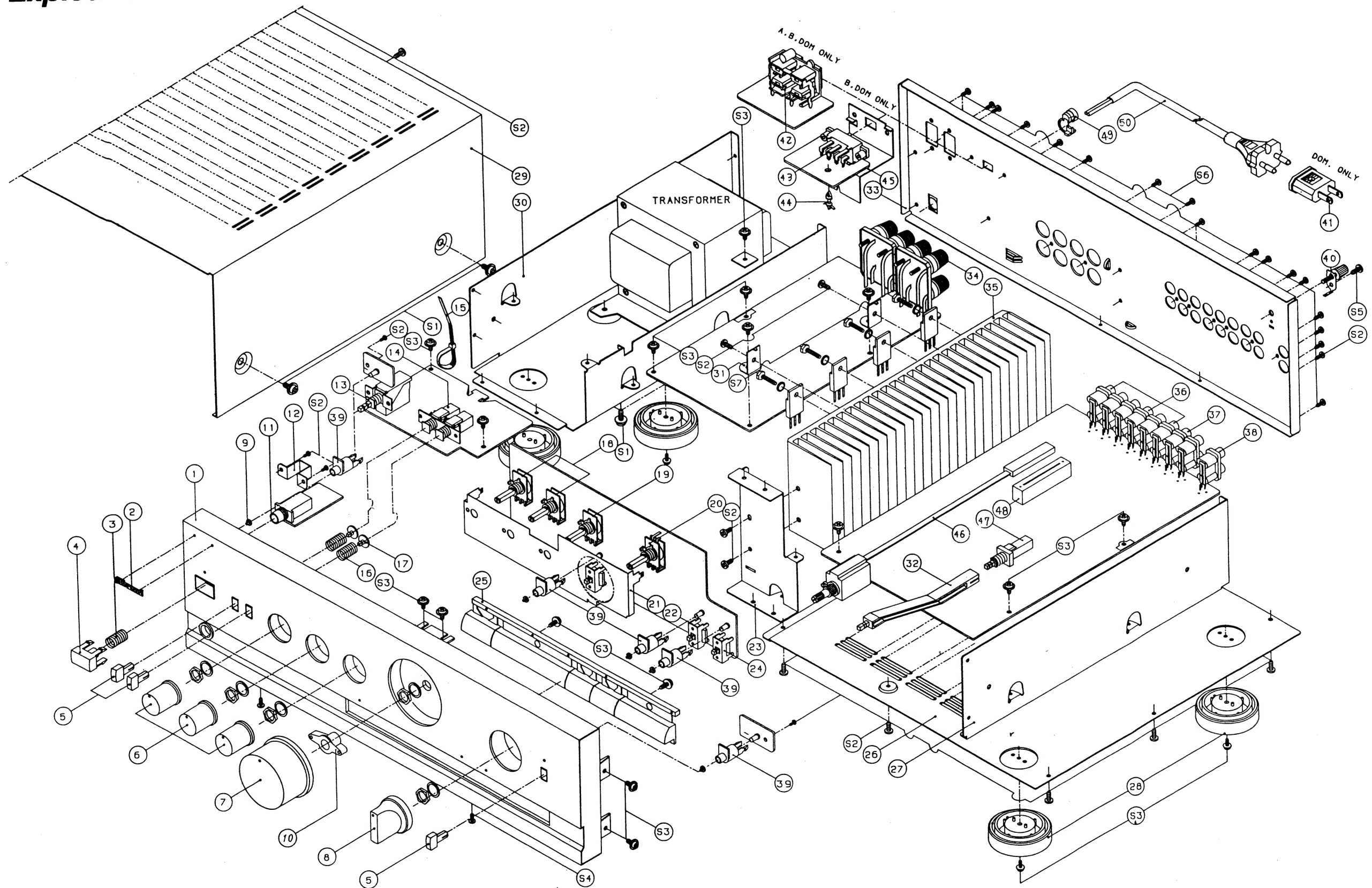
Block Diagram



Wiring Diagram



Exploded View



Schematic Diagram

